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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/651,105

08/29/2003

Mamoru Nakasuji

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01/19/2006

WENDEROTH, LIND & PONACK, L.L.P.

2033 K STREET N. W.

SUITE 800

WASHINGTON, DC 20006-1021

EXAMINER

LEYBOURNE, JAMES J

ART UNIT

PAPER NUMBER

2881

DATE MAILED: 01/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/651,105	NAKASUJI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	James J. Leybourne	2881	

**– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 November 2005.  
 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 66-100 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) ☒ Claim(s) 66-88 and 91-100 is/are allowed.  
 6) ☒ Claim(s) 89 and 90 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☒ The drawing(s) filed on 29 April 2004 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \* c) ☐ None of:  
         1. ☒ Certified copies of the priority documents have been received.  
         2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
     \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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### **DETAILED ACTION**

1. According to the "Amendment" received 25 November 2005, the specification has been amended; the Abstract has been amended, claims 1-65 have been canceled; and claims 66-100 have been added.

### ***Response to Arguments***

2. Applicant's Remarks received 15 November 2004 have been fully considered and are persuasive with the exception of claims 89 and 90.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 89 and 90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sogard (US 2003/013282 A1) in view of Nakasuji (USPN 5763893).

Sogard teaches all the limitations of claim 89 and 90 except for stating that the limitation that the electron gun(s) has a thermionic emission cathode and is operated under a space-charged condition and a small shot noise condition.

Regarding claim 89, Nakasuji teaches an electron gun of a thermionic emission type and designed to operate in a space charge limited condition (Abstract). As known in the art there are many types of electron sources and the choice depends on the system requirements. It would be obvious to one of ordinary skill in the art to use a thermionic source used over a space-charge-limited current range because Nakasuji teaches this causes the electron gun to exhibit no change in brightness even with small fluctuations in cathode temperature and directional uniformity of electron-beam intensity is not impaired (column 5, lines 8-15).

***Allowable Subject Matter***

4. Claims 67-88 and 91-100 are allowed. The following is an examiner's statement of reasons for allowance:

Regarding independent claim 66, the prior art fails to disclose or make obvious an electron beam system comprising:

an electron gun for emitting an electron beam and for irradiating the electron beam against a sample;

an electron lens for magnifying the electron beam after having passed through the sample; and

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a detector for detecting the electron beam after having been magnified so as to form an image of the sample, wherein a crossover image of said electron gun is to be formed on or in the vicinity of a principle plane of said electrons lens.

Claims 6788 and 91 are allowed by virtue of their dependency on claim 66.

Regarding independent claim 92, the prior art fails to disclose or make obvious an electron beam system comprising:

an electron gun for emitting a primary electron beam and irradiating the primary electron beam against a sample, when positioned at an irradiation location as a subject to be inspected, so as to form an electron image, by a transmission electron beam having passed through the sample, to be magnified and detected;

an NA aperture disposed in a path of the transmission electron beam; and

an electron lens in the vicinity of the irradiation location,

wherein a principle plane of said electron lens and said NA aperture are in a conjugate relationship with respect to each other.

Claims 93, 94, 96 and 100 are allowed by virtue of their dependency on claim 92.

Regarding independent claim 95, the prior art fails to disclose or make obvious an electron beam system, in which an electron image of secondary electrons emanated from a sample surface, back scattering electrons or an electron having passed through the sample is magnified by an at least two-stage electron lens and then detected, wherein a magnified image produced by a first stage of said electron lens is focused on a point upstream of the second stage of said electron lens to thereby reduce a distortion aberration or a magnification aberration.

Claim 98 is allowed by virtue of its dependency on claim 95.

Regarding independent claim 97, the prior art fails to disclose or make obvious an electron beam system that projects an image of a sample using electrons that pass through the sample onto a detector that forms a detected image and a distortion aberration in the detected image is simulated by calculation to thereby determine a difference between a third order of absolute value and a fifth order of absolute value of the distortion aberration, and a compensation parameter is optimized such that said difference is minimized or that the fifth order of absolute value is greater than the third order of absolute value by about 5 to 15 %.

Regarding independent claim 99, the prior art fails to disclose or make obvious an electron beam system comprising:

an electron gun for emitting an electron beam and for irradiating the electron beam against a sample when the sample is positioned at an irradiation location;

an electron lens disposed close to the irradiation location, said electron lens for magnifying, as a transmission electron image, electrons that have passed through the sample so as to be detectable by either one of a CCD, a TDI or an EBCCD; and

an aperture between said electron gun and said irradiation location, with an aperture image to be focused on or in the vicinity of a principle plane of said electron lens, wherein when a magnification for magnifying the electrons is to be changed, a distance between the irradiation location and said electron lens is changed.

***Conclusion***

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James J. Leybourne whose telephone number is 571 262-2478. The examiner can normally be reached on **M\_F 10:00AM - 6:00 PM**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on 571 272-2477. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

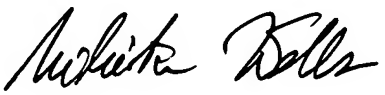
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
NIKITA WELLS  
PRIMARY EXAMINER 01/13/06

January 6, 2006

JJL